U.S. Geological Survey Response to the Report of the 2005 External Task Force to Review the Cooperative Water Program
June 1, 2006

Background

In 1998 the Advisory Committee on Water Information (ACWI) established a Task Force to review the U.S. Geological Survey (USGS) Cooperative Water Program (CWP). The 1999 review was the first external review of the CWP in its 105-year history. The purpose of the 1999 review was to gather information, assess the effectiveness of the program, and recommend improvements. In 2004, five years after the CWP Task Force report was released, the USGS and ACWI expressed interest in an external evaluation of the progress made to date by the USGS in responding to the recommendations of the 1999 Task Force. A new Task Force was assembled under ACWI to provide such an evaluation, and in January 2006 this Task Force presented its final report to ACWI, which approved it. The report may be viewed on the internet at http://water.usgs.gov/wicp/acwi/coop2004/CoopTFRpt.pdf

General Comments

The USGS is pleased with the thorough and thoughtful review of the Cooperative Program, and appreciates the recognition of successes as well as the suggestions for improvement. The report provides a clear and compelling message to those inside and outside the USGS as to what is needed to maintain and improve this vital program.

As stated on page 6 of the report, The USGS has adopted 48 of the 59 recommendations from the 1999 Task Force, and plans to adopt nine of the remaining eleven. The Task Force and the USGS agree that implementation of five of the recommendations is complete with no further action required. Five more recommendations are designated by the Task Force as complete, but some additional or continuing implementation efforts are planned. The remaining 38 adopted recommendations and the nine that are planned for adoption also require implementation actions. These actions are spelled out for each recommendation in Appendix B, beginning on page 23 of the Task Force report. In aggregate, this list of actions constitutes an implementation plan for the remaining recommendations.

Issues from the Executive Summary

Three recommendations were singled out by the Task Force as requiring special attention or a change in USGS policy, and were discussed in the Executive Summary. The USGS welcomes the opportunity to comment in greater depth on these issues.

1. **Balance between data collection and interpretive studies**. The Task Force recommended (10.1) that the USGS should place emphasis on data collection, rather than interpretive studies, in the CWP. The Task Force recognized the continuing importance

of interpretive studies, but said the USGS needs to be careful not to reduce data-collection efforts.

As stated in the report, the USGS places a high value on long-term data-collection activities. The USGS commitment to maintaining a consistent long-term data-collection network is reflected not only in our contributions from the CWP, but also from other data-oriented water programs such as the National Streamflow Information Program, the National Water Quality Assessment, the Ground-Water Resources Program, and the Hydrologic Networks and Analysis Program, which includes data-collection activities such as the National Stream Quality Accounting Network (NASQAN), the Benchmark Network for water-quality monitoring in relatively pristine headwater areas, and the National Atmospheric Deposition Program (NADP). Along with our commitment to these long-term data-collection programs, however, goes a similar commitment to interpretive studies that inform the Nation and our cooperators about the messages contained in the data we collect. A body of long-term data is of crucial importance, but its value is not fully realized without a corresponding body of applied science and research that interprets the data, advances understanding of hydrologic processes, and stimulates the development of new data-collection techniques. The real value of the USGS to the Nation stems from this combination of data and a cadre of trained scientists who can study and interpret the science contained in the data.

The States, tribes, local government, other Federal agencies, and the public depend on the hydrologic knowledge and scientific capacity of the USGS workforce to help them evaluate hydrologic systems and resolve new and emerging water resource issues. Defending long-term data networks without supporting USGS interpretive studies would result in incomplete hydrologic-science service to the Nation. USGS leadership seeks to maintain a balance among long-term data, interpretive studies, and research in its water science portfolio.

The balance between data and studies in the CWP is not dictated by Headquarters or Regions, but is left to the discretion of Water Science Center (WSC) Directors, who are in frequent communication with State and local cooperators regarding the needs of the water-resources community in each State. This leads to variations from one WSC to another, but in aggregate the balance and funding levels have remained relatively steady.

One step in dealing with this issue is to ensure that we have accurate information about the history of expenditures on data and studies within the CWP. The USGS has relied on centrally-reported expenditures in “data accounts” (project accounts intended primarily for surface-water, ground-water, water-quality, sediment, precipitation, and water-use data collection) to account for the data effort. In 2006 we have begun checking these records with Water Science Center Directors and verifying the data expenditures in greater detail. We will continue to track these expenditures more closely each year.

A careful analysis of FY ’05 expenditures in the CWP shows that nationwide, 57 percent of expenditures of Federal funds were in the data accounts, and 43 percent were for studies that were primarily interpretive. This distribution of the Federal funds

demonstrates an emphasis on data collection. In addition, the matching ratio of Federal to non-Federal funds in each category also reflects an emphasis on data collection. The proportion of Federal funds in the data category in FY '05 was 37 percent, while the proportion in the studies category was 32 percent.

Traditionally Federal funding in the Cooperative Water Program has increased slightly each year to cover inflation, with occasional additional increases that bring about slight program growth. That situation was suitable for providing consistent long-term funding for data collection, as long as cooperator funding was available. In recent years, however, flat or slightly declining Federal funding, with little or no increase to cover inflation, has eroded the purchasing power of the Federal side for both data collection and studies. When cooperator budgets cannot pick up the slack, the program is faced with the difficult prospect of discontinuing needed data-collection stations as well as cutting back on studies. This issue has been prominently addressed by cooperators in their communications with policy makers, and their voices have been heard. The President's proposed FY 2007 budget contains a $2.3 million increase for the National Streamflow Information Program, to help stem the gradual erosion of the streamgaging network. Furthermore, the proposed $.7 million cut in the Cooperative Water Program is aimed specifically at interpretive studies, and not at data collection.

The USGS will continue to examine this issue in greater detail, including trends. Where trends show a disproportionate decline in the data collection program compared with interpretive studies, USGS will seek ways to protect the data collection network. USGS will also continue to explore, through the National Streamflow Information Program and other Federally funded data-collection programs, the possibility of full Federal funding for a core set of streamgages and for other data-collection activities.

2. **Fostering better working relationships with cooperators**. The Task Force recommended that, in the interest of cost-efficiency and effective use of resources, the USGS should re-examine the use of in-kind service credit and continue to look for ways to foster better working relationships with cooperators.

During the past two decades the way in which USGS partners with the water resources community has been evolving. As funds to address water resource concerns have become scarcer and water resources problems have become more challenging, stakeholder organizations have joined together to do the work that is necessary to address the water resources issue. State agencies, federal agencies, local governments, and tribal governments have banded together to develop strategies and work plans to provide the data, do the analyses, answer questions, and build the decision-making tools needed to address the water resource issue. This team then assesses the work tasks needed and divides up the work among them based on what each organization can easily and economically offer to the effort. Then they pool their cash resources to accomplish what project tasks none of them could provide.

USGS has proven itself to be an outstanding partner in these "stakeholder teams" that are addressing water resources issues. USGS always brings additional scientific expertise to

the team, we can often draw on applicable examples from a nation-wide program, we have a ready tool-box of non-proprietary software and models to bring to the issue, we have access to outstanding analytical laboratories and database management tools, and we often have a little Cooperative Water Program matching funds to throw into the mix.

The policy of the USGS is to embrace cooperator participation in interpretive studies and data collection when doing so is in the interest of the project. We will be giving internal publicity to this policy and to some of the following examples of such collaboration:

Examples of Collaboration on Interpretive Studies:

Oregon: For about 15 years, the Oregon Water Resources Department has collocated two State employees in the USGS Oregon Water Science Center office. These two State employees have desks in the USGS office and spend several days a week there working cooperatively on ground-water studies and models. State and local agencies rely on these studies and models to make prudent management decisions regarding withdrawals of ground water for irrigation, industrial, and public-supply use. Over the 15 years, they have worked together with USGS scientists to conduct and plan studies in 5 different watersheds (the Portland basin, Willamette basin, Deschutes basin, Klamath basin, and most recently the Umatilla basin) and have co-authored over 20 products with USGS co-authors. Having the cooperator on-site, working directly with UGSG scientists, has increased communication with the State on these studies and on other issues, leading to joint planning of studies and development of county workshops aimed at providing additional expertise to their efforts. State employee involvement also has brought addition geology and data synthesis expertise to USGS studies. It has also ensured that the models are put into useful service in the hands of capable, trained employees. Most importantly, this close association has ensured real-time feedback on tasks accomplished by USGS scientists, ensuring that products are on target and immediately useful for the State.

Oklahoma: The USGS is working in partnership with the Oklahoma Water Resources Board (OWRB) to conduct a study of the Arbuckle-Simpson Aquifer and develop a ground-water model that can be used to ensure that management alternatives will maintain flows from streams and springs connected to the aquifer. OWRB, the U.S. Bureau of Reclamation, USGS, and the Chickasaw Tribe are the funding partners for this project. A representative from the OWRB manages the overall project and chairs a Technical Advisory Committee comprised of representatives from the Water Resources Board, USGS, EPA, Oklahoma State University, and the Oklahoma Geological Survey. This committee provides technical expertise and synthesis of project activities. Specifically, the OWRB is providing management assistance to the project and collecting most of the hydrologic data needed, including ground-water-level data, streamflows, and water use data, and providing GIS support. The Oklahoma Mesonet is providing basic climatic data. The University of Oklahoma is evaluating past climatic conditions using tree ring analyses, and predicting rainfall, runoff, and ground-water recharge to the aquifer using NEXRAD data.

Oklahoma State University is providing field assistance, literature reviews, and technical expertise regarding the geology and fracturing of the aquifer. The USGS is doing streamflow monitoring, ground-water modeling, geochemistry, analyses of well hydraulics, and GIS support, and is developing an Earth vision geologic model and gravity geophysics as part of separate studies of the area. Other stakeholders, including city governments and special interest groups, are also involved in the project. So again, here is another example of a strong partnership within the water resources community to address complex and critical aquifer use issues.

Examples of Collaboration on Data Collection:

Virginia: For 25 years the USGS Virginia Water Science Center and the Virginia Department of Environmental Quality (VDEQ) have been collaborating on data collection at about 150 streamgages. VDEQ uses USGS protocols and equipment to install and operate gages, make measurements, and work records. The State provides quality assurance and enters the records directly into the USGS National Water Information System database under a flag that signifies "Station operated by VDEQ". USGS provides training and mentoring; access to the USGS Hydrologic Instrumentation Facility for procurement of equipment, access to the real-time data network, and access to the National Water Information System for entering records.

Oregon: The USGS Oregon Water Science Center collaborates with several entities on a multiyear data collection program. In this case, the Nez Perce Tribe is the primary cooperator to the USGS, but the Grande Ronde Model Watershed Program and the State of Oregon Water Resources Department also are providing support. The project involves running a five-gage, surface-water network. Total cash outlay needed by the Tribe for the network was reduced by incorporating services from the two other agencies. An employee of the Watershed Program conducts the field work associated with the gages and the Water Resources Department computes and checks the discharge record. The USGS trained the Watershed Program employee collecting the data, operates four DCPs in the network, reviews and provides QA/QC on the field work and records computations, and publishes the data. In addition to requiring less cash outlay for the Tribe, this partnership also benefited the Watershed Program by keeping their employee well trained on discharge measurement techniques. Also, more measurements were obtained and problems were fixed more quickly by a local Watershed Program person than they would have been if maintained by a USGS employee located about 2.5 hours away from the network.

Other States with similar examples of data-collection collaborations include California, Texas, and New Jersey.

The USGS will continue to inventory examples of successful collaborations in which cooperators contribute effort as well as funding to a project, and will publicize these

examples throughout the Water Resources Discipline. Additional ideas for forging successful working partnerships, including use of credit for in-kind services will be encouraged where appropriate. In addition, the USGS has convened a Streamgaging Cost Efficiency Committee to look at ways of improving the cost-effectiveness of the streamgaging program. One of the measures the Committee is considering is to increase use of such collaborations. This is expected to result in more formal policies and practices embracing such collaborations.

3. Avoiding competition with the private sector.

The Task Force recommended that the USGS needs to make sure that they are not competing unfairly with the private sector. The USGS acknowledges that the capabilities of the private sector in the field of water-resources science have expanded in recent years, and that it is important for the Federal government to avoid unfair competition with the private sector. The crux of the issue is the definition of the appropriate role for the Federal government in water-resources data collection and research. To define that role in a way that makes a clear distinction between the roles of the Federal government and the private sector, the USGS has issued a series of policy memoranda over the years. These memoranda are available on the CWP Web site at http://water.usgs.gov/coop/competition.html. Directives about avoiding competition with the private sector date back at least to Water Resources Division (WRD) memoranda of 1976, 1979, and 1984. In WRD Memorandum No. 84.21, entitled "Hydrologic Activities to be Excluded from the Federal-State Cooperative Program," the Chief Hydrologist reminded USGS employees that they are not to provide services to private parties, that they should avoid work involving site-specific engineering or design, and that they must remain neutral on matters of policy and not recommend specific courses of action. All of these roles are reserved for the private sector.

In WRD Memorandum No. 95.44, issued in 1995, the Chief Hydrologist directed that the USGS should avoid projects that are driven solely by an operational need of the customer to meet some information requirement for a permit or regulation. It also listed eight basic criteria that demonstrate a legitimate Federal interest in a project: *"1) advancing knowledge of the regional hydrologic system, 2) advancing field or analytical methodology, 3) advancing understanding of hydrologic processes, 4) providing data or results useful to multiple parties in potentially contentious interjurisdictional conflicts over water resources, 5) furnishing hydrologic data required for interstate and international compacts, Federal law, court decrees, and congressionally mandated studies, 6) providing water-resources information that will be used by multiple parties for planning and operational purposes, 7) furnishing hydrologic data or information that contribute to protection of life and property, and 8) contributing data to national data bases that will be used to advance the understanding of regional and temporal variations in hydrologic conditions."* Memorandum No. 95.44 also mentions the important requirement that USGS data, methods, and scientific results be made publicly available to all interested parties. This requirement not only serves the public interest, but also creates benefits for the consulting community. Many engineering and hydrologic consulting companies make frequent and productive use of the USGS hydrologic databases, methods, models, and project results in their work.

In 2004 the USGS Associate Director for Water issued an updated version of Memorandum No. 95.44, numbered WRD Memorandum No. 04.01. In reiterating the longstanding USGS policy against competing with the private sector, the memorandum stated that:

"The expertise and capabilities of the hydrologic consulting community continue to evolve, and the emphasis on the privatization and outsourcing of work previously done by Federal agencies is increasing. However, we believe that our mission continues to provide clear and compelling justifications for our Federal role in water information and that we must be ever more vigilant in adhering to that role ….

"The essential role for WRD is to be the principal Federal provider of hydrologic data, theory, research, and new technology for the Nation. As such, the WRD needs to maintain its competence through hydrologic research and methods development, distributed data-collection and resource-assessment programs, and continuous stakeholder (cooperator and other Federal agency) input ....

"Paramount in our relationships and programs with other agencies, however, is the need to maintain the longstanding WRD policy not to compete with the private sector. This means that WRD must be responsive to the requests and interests of potential partners, but at the same time, set limits on the type of work undertaken on their behalf."

This memo reiterates the eight basic criteria that demonstrate a legitimate Federal interest in a project and requires that new project proposals include a statement of relevance and benefits that describe the Federal interest in the proposed project.

The USGS also recognizes there are limits to the Federal role in hydrologic science. Accompanying WRD Memorandum No. 04.01, and also listed on the CWP "avoiding competition" Web page (http://water.usgs.gov/coop/competition.html), are several other memos that address specific types of work that are more appropriate for the private sector to undertake. These include certain aspects of flood-insurance mapping, bridge-scour studies, artificial-recharge studies, and well-head protection studies. Additional memos are under preparation for studies related to Total Maximum Daily Load and borehole geophysical logging activities. Even with these restrictions, there are some occasions when private consulting companies feel that the USGS has used its Federal matching funds as a means of unfairly competing with the private sector. The USGS recognizes that it is important to address these complaints about competition and will continue striving to avoid competition.

While the USGS seeks to avoid competition with the private sector, the bureau welcomes productive collaboration with the private sector. WRD Memorandum No. 04.01 specifically encourages development of three-way partnerships whereby the USGS, private consultants, and State and local cooperators pool their talents and skills to solve hydrologic problems. A recent survey of USGS Water Science Centers identified 36 current three-way partnerships involving the private sector. These examples indicate frequent collaboration between the USGS and the private sector involving development and sharing of hydrologic simulation models. Frequently models are developed by the USGS and transferred to the cooperator's

private consultant for operational use. There are also many examples where USGS data are used by consultants to develop and calibrate models.

The private sector consulting community commonly acknowledges that data provided through the USGS CWP, as well as other USGS programs, are vital to their projects. Access to USGS streamflow data, water-quality data, ground-water levels, potentiometric-surface maps, aquifer maps and characteristics, time-of-travel data, and other USGS information are crucial to the success of many private-sector projects. To cite just one example, the recent development, by a private consultant, of RiverSpill and the associated Incident Command Information Tool depended heavily on USGS data. This tool, which simulates the downstream propagation of a plume of contamination in a river, relies on USGS products and services that come from the CWP, such as the National Hydrography Dataset, real-time streamflow data, and regional time-of-travel equations to provide drinking-water utilities and others with warnings of impending pollution events generated by upstream spills. The USGS is highly supportive of this type of use of these data collected by the USGS in the CWP.

The USGS Water Discipline (including the CWP) regards the private sector as an important partner in the water-resources science community. We have taken, and will continue to take, significant steps to avoid competition with the private sector, to encourage productive collaborations with the private sector, and to contract out work that is appropriate for the private sector. One of 36 recently compiled examples of such productive collaborations with the private sector illustrates this point: The New York State Department of Environmental Conservation is interested in learning about emerging contaminants in wastewater. They want to determine the occurrence of pharmaceuticals, hormones, and other organic contaminants in wastewater in central and southern New York, and evaluate the efficacy of various treatment systems for removing these contaminants from wastewater prior to release to rivers or injection into aquifers. The private-sector member of the collaborative team, the firm Metcalf and Eddy, provides expertise in advanced wastewater treatment technologies and sampling strategies for wastewater systems. The USGS brings an ability to process samples and run laboratory analyses for large numbers of these chemicals down to very low concentrations. Furthermore, the USGS has great expertise in analysis of such data in light of temporal and spatial variabilities. The USGS and Metcalf and Eddy are publishing results jointly and presenting them jointly at technical meetings. The State funds Metcalf and Eddy and USGS separately, but with a clear understanding of the collaborative nature of the work. This partnership was recognized with a Platinum Award from the New York Chapter of the American Council of Engineering Companies in April 2005.

The USGS Water Discipline will continue efforts to bring all of the interested parties (cooperators, the private sector, and users of USGS hydrologic products) together to efficiently use the available resources to help solve the Nation's water science needs. In addition, the USGS will continue to review and update its guidelines on avoiding competition with the private sector and will continue to look for ways to establish productive collaborations instead of competition with the private sector.

Additional Issues from Section III of the Report

Section III of the Task Force Report deals with Areas of Disagreement or Insufficient Progress. In addition to the three issues mentioned above, this section also includes discussions of two other significant issues:

Timeliness of Reports

The Task Force acknowledged some progress in improving report timeliness over the last few years, but indicated that future progress should be even better. The Task Force recommended five steps to help ensure the timely publication of interpretive reports (recommendation 25.1), and consistent nationwide adoption of a policy to provide the earliest possible release of hydrologic data to cooperators (recommendation 30.1).

The USGS agrees to implement the steps suggested as part of Recommendation 25.1. In addition, Regions will continue to track overdue reports and will work with Water Science Centers to ensure adequate resources are made available to reduce backlogs of such reports. Statistics will be compiled annually on a nationally consistent basis, and will be discussed periodically with management at all levels.

Funding for the Cooperative Water Program

The Task Force emphasized that they consider full funding of the CWP (restoration of a 50:50 matching ratio) as the highest priority of all the recommendations. The USGS acknowledges the recent trend toward cooperators bearing an increasing share of the cost of the CWP, and agrees that bringing the match ratio back closer to the traditional 50:50 would be appropriate for a true partnership. Federal funding for all programs of the USGS and all of the Department of the Interior is very limited. Many excellent programs are funded at levels that are less than their stakeholders wish. Difficult funding choices must be made, and stakeholder input is crucial to this priority-setting process. The USGS also recognizes that this recommendation, combined with the recommendation to emphasize data collection, carries special significance for funding related to data collection. The USGS will continue a dialogue on this issue with stakeholders and budget officials. In these discussions the CWP will be mentioned along with other funding mechanisms for related work, such as the National Streamflow Information Program.

Additional Steps

The remainder of the USGS plan for implementing recommendations from the Task Force may be found in the notes on "USGS Implementation Plans" in Appendix B. Several of these actions will involve guidance memoranda to be distributed to the Water Science Centers and Regions. Others will involve a survey of cooperators. In addition, the USGS will encourage more widespread scheduling of multi-cooperator discussions at the State level in order to further enhance communications.

For all of the recommendations to improve the Cooperative Water Program, the USGS expresses its appreciation to the Task Force, the Advisory Committee on Water Information, and the organizations represented on these bodies. Their thoughtful contributions to this effort have helped to provide a road map for an even more effective Cooperative Water Program.